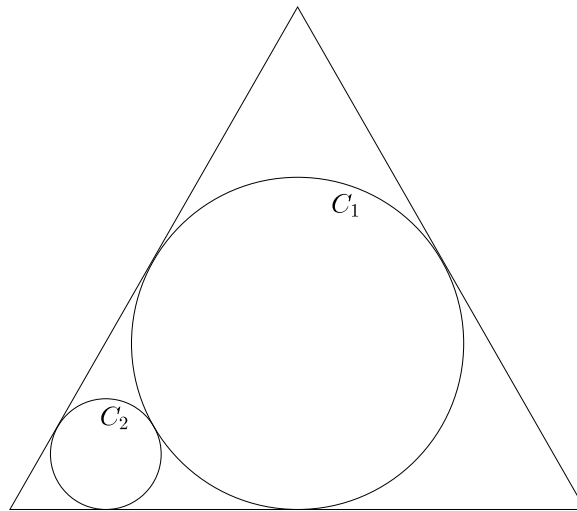


Year 12 Advanced mathematics problems course 2018-19.

Sample problem. The diagram below shows a circle C_1 inscribed in an equilateral triangle of side 6 units. C_2 is a circle that touches C_1 and two sides of the triangle as shown. Given that the base of the triangle is on the x axis with the origin at the lower left vertex. Find the coordinates of the centres and equations of C_1 and C_2 .



Course aims and description

The Department of Mathematics/FMSP year 12 advanced problems course is a certificated one: that is, students who attend and submit assignments regularly will obtain a Department of Mathematics Certificate of Achievement.

The course aims are:

1. The development of students mathematical thinking.
2. Increasing students confidence in solving unstructured problems.
3. Improved preparation for the MAT, AEA and STEP examinations.

The problems in the course are based year 12 pure mathematics topics but are unstructured and challenging. Students on the course are expected to do preparatory reading prior to the problems classes and to solve problems in class on whiteboards under the supervision of the class tutor.

The course is free for all year 12 students. Students should email mathsor@le.ac.uk to apply for a place on the course. Generally places are determined by performance on problems in the application form. Students on the course will be emailed the class venues, all in the main university campus on University Road, Leicester, in good time.

The course schedule

| Class: | Date |
|-----------------------|---------------------------|
| Algebra 1 | Tue Sept 11: 4.30 to 6 pm |
| Coordinate Geometry 1 | Tue Oct 2: 4.30 to 6 pm |
| Series 1 | Tue Nov 13: 4.30 to 6 pm |
| Calculus 1 | Tue Dec 4: 4.30 to 6 pm |
| Algebra 2 | Tue Feb 12: 4.30 to 6 pm |
| Coordinate Geometry 2 | Tue Mar 26: 4.30 to 6 pm |
| Series 2 | Tue April 9: 4.30 to 6 pm |
| Trigonometry | Tue May 7: 4.30 to 6 pm |